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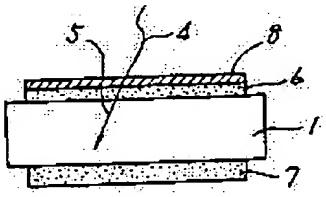
(54) NEUTRON DETECTOR

(57)Abstract:
PURPOSE: To obtain a neutron detector with high detection accuracy by combining a semiconductor P-N junction or semiconductor metallic Schottky junction or crystal semiconductor-amorphous semiconductor hetero junction and a thin boron film contg. the isotope 10B of boron at a high concn.
CONSTITUTION: An aluminum electrode 6 as a barrier metal and a metallic electrode 7 as an ohmic contact are respectively deposited by vacuum evaporation on, for example, a P type silicon substrate 1. Then thin boron film 8 is formed on the surface of at least either of the electrodes 6 and 7. When thermal neutron rays 4 are made incident on the element having such surface barrier type construction while a reverse voltage is held impressed thereto, α rays 5 are generated by neutron nuclear transformation reaction during the passage of the rays 4 through the thin boron film 8. The α rays 5 intrude into the depletion layer formed in the substrate 1, thus forming electron-hole pairs and forming current pulses. The detection of the thermal neutron rays is made possible. The neutron detector having the simple construction, high stability and high detection sensitivity is thus obtd.



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